Elbow and Wrist Injuries in Sports

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FRACTURES OF THE ELBOW AND WRIST often cause little deformity and swelling and therefore may not be suspected until improper healing has permanently impaired joint function. The disability may not interfere with ordinary work but it may limit the free painless motion necessary to sports and other strenuous activities. Therefore any disabling injury of these joints should have roentgen study to detect any fracture.

• Any disabling injury of the elbow or wrist should be studied roentgenographically for evidence of fracture which may not be otherwise evident but which may cause permanent disability unless the joint is immobilized for healing.

"Tennis elbow" may be treated with physical therapy and analgesic injection but may require splinting or tendon stripping. Elbow sprain can occur in the growing epiphysis but is rare in adults. A jarring fall on the hand may cause fracture or dislocation at the elbow.

Full extension of the joint should be restored gradually by active exercise rather than passive or forcible stretching.

Fracture at the head of the radius may cause joint hemorrhage with severe pain which can be relieved by aspiration. A displacing fracture at the head of the radius requires removal of the head to prevent arthritic changes. Myositis ossificans contraindicates operation until after it has cleared.

Healing of wrist fractures may be facilitated by exercise of the shoulder and elbow while the wrist is still in a cast. Fractures of the navicular bone are difficult to detect even roentgenographically and splinting may have to be done on clinical evidence alone.

THE ELBOW

The frequency of elbow injuries in athletics can be gauged from the experience at Columbia-Presbyterian Medical Center where, not counting dislocations, 21,000 fractures of the elbow were treated in 17 years—about one every three days.

The elbow is really not one joint but three, since the radius and the ulna are joined to each other and individually to the humerus. Not only flexion and extension but also pronation and supination are functions of the elbow, and impairment of these functions may greatly hamper the use of the hand. Such disability may develop in an athlete without any history of direct injury.

The most frequent cause of pain about this joint is the so-called "tennis elbow," which is most often due to lateral epicondylitis although the medial epicondyle may be similarly affected. The usual symptoms are pain over the condyle and weakness of grip. On examination tenderness may be localized to the epicondyle and the conjoined tendon and may be increased on resisted extension of the wrist because the extensor tendons to the wrist arise from the lateral condyle. Tight gripping places stress on the origin of the tendons which is the site of inflammation.

This inflammation may be treated with warm soaks, compresses, or whirlpool. Local injection of 1 per cent Xylocaine® and 1 cc. of hydrocortone® usually relieves symptoms. In a few intractable cases it may be necessary to splint the wrist in extension or even to strip the tendon from the condyle for permanent relief.

Calcium deposit about the elbow may sometimes cause similar symptoms and can be diagnosed roentgenographically. Essentially the same treatment is indicated.

The elbow may be injured either by a direct blow or by a jarring fall on the flat of the hand. The numerous important structures that pass by the elbow joint can be damaged by swelling or dislocation; therefore elevation, application of ice bags and the immobilization of severe injuries by splinting are important first-aid measures. Immediate rapid swelling about the elbow following an injury should alert an athlete's trainer or coach to the probability that a major vessel has been injured. Obliteration of the radial pulse signals a major emergency and the patient should be sent to a hospital.

Sprain of the elbow is a rare condition. It practically never occurs in children, in whom the growing epiphysis is weaker than the ligaments and more likely to be injured. In the college athlete, if roentgen films disclose no fracture and there is no evidence of a spontaneously reduced dislocation, sprain may sometimes be diagnosed. A few days' rest, soaks, whirlpool therapy and gradual return to full use are indicated.

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Dislocation of the elbow joint is a serious injury because of the trauma to the adjoining soft tissues and ligamentous structures. Usually there is gross deformity about the joint and pain on motion of the elbow; sometimes the patient may report that the elbow snapped out and back in, with severe pain following. Roentgen study may reveal fracture, most often of the coronoid process in a posterior dislocation. The dislocations should be reduced under general anesthesia as soon as possible, then the elbow immobilized in a posterior molded plaster splint from the axilla to the wrist for ten days, and thereafter supported in a sling for several weeks. Flexion, pronation and supination of the arm should be started early, but for three weeks extension beyond 150 degrees should not be permitted. If the coronoid process is fractured, the cast should be retained for two weeks and extension limited to 130 degrees for three weeks.

A typical fracture of the head of the radius—one of the most frequent of elbow fractures—occurs in a fall which the patient breaks with his outstretched arm. He may then note a slight pain in the elbow but may go on with no severe symptoms. Gradually in the next four to six hours severe pain develops with limitation of elbow motion, both due to bleeding from a fissure fracture of the head of the radius which fills the joint with blood. The joint may be distended, painful on any motion, tender directly over the head of the radius. Roentgenograms must be taken from several views to show the fracture.

Aspiration of the joint (under sterile conditions) gives immediate relief of pain. If there is no displacement the elbow should be immobilized for two to three days in a posterior mold, later protected by a sling for about a week while motion is resumed. If there is displacement, pain and limitation may occur immediately on injury, and the head of the radius must be removed to prevent early arthritic changes and loss of elbow motion. Removal of only the fractured segment is not advocated. Motion may be resumed about a week after operation.

The next most common elbow fracture of a severe nature in the mature athlete is the dicondylar fracture due to a direct fall on the elbow. The fragments are usually displaced and operative repair is necessary. Deformity and loss of motion often result.

Elbow injuries may cause myositis ossificans—proliferation of bone within the brachialis muscle overlying the joint. This is usually visible in roentgenograms two to three weeks after injury and tends to increase for several months but regresses spontaneously within six months. Any operation in the area is definitely contraindicated for 9 to 12 months following the onset of myositis ossificans. Sports, too, are contraindicated during this time, for vigorous motion stimulates bone formation as a reaction to trauma.

An error sometimes made by trainers in dealing with an elbow injury is to try to improve extension by passive stretching or by the lifting of heavy weights or by push-ups. These methods only delay healing. Active exercise, gentle heat and massage, whirlpool baths and ultrasound are better methods when used judiciously.

THE WRIST

The motion of the eight carpal bones joining the forearm to the metacarpals is poorly understood. In this region, as in the elbow, the impact of a fall may cause a fracture which at first is discernible only by roentgen study and which can lead to permanent impairment of function unless treated early.

The commonest wrist fracture, the distal radius, is usually reduced closed, then immobilized for four to eight weeks. An athlete should be able to recover full athletic function in two to four weeks. Full motion of the shoulder and fingers should be encouraged while the cast is on, then active wrist exercise and whirlpool therapy after removal of the cast.

The next most common fracture is that of the navicular bone. Since usually it causes little swelling or deformity, it is often mistaken for a sprain. Tenderness localized over the navicular bone should accentuate the suspicion of fracture, which may be confirmable only by multiple and special roentgen views. If confirmation is impossible, clinical findings may justify immobilization in a gauntlet cast for two to three weeks. After the cast is removed there may be roentgenographic evidence of reabsorption at the fracture line. Immobilization then should be resumed for a total of 12 to 16 weeks. Nonunion and aseptic necrosis, which are not rare, cause painful limitation of motion. These effects can best be prevented by early adequate immobilization.

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